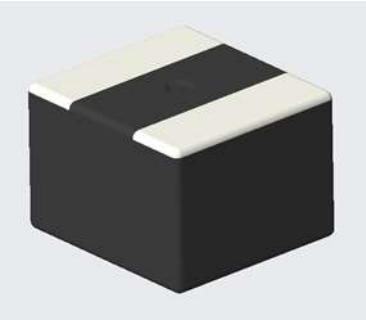
■ Power Inductor — EMP322512B-MT



● Application

— DC/DC converter

— Smart phone/PAD,HDD/SSD,DVC/DSC

— Mobile display panels, portable game devices, compact power supply modules, DDRX, other.

● Features

— High magnetic flux saturation density characteristics by metal magnetic material.

— Low DC resistance by flat wire. and achieve high conversion efficiency and lower temperature rising.

— Magnetically shielded structure to accomplish high resolution in EMC protection.

— High mounting stability due to Chip shape.

— High reliability by original structure.

— For general electronic equipment.

■ Parts Number Explanation

Example:

EMP	322512	B	R68	MT	—	T	L	Z
Product Type	Size (mm)	Application	Inductance（uH）	Tolerance		Package	Internal Code	Optional
Mini Power Inductor	322512	T – Core	R68=0.68 uH	M：±20%		T：Taping		Z：Default Code

■ Standard Electrical Specifications

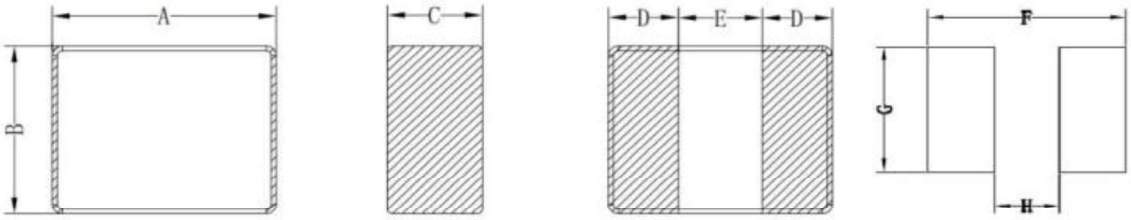
Part No.	Inductance	DC Resistance		Saturation Current		Heating Rating Current	
	L0 (μH) ±20 %	DCR (mΩ)		Isat (A)		Irms (A)	
	1 MHz, 1V	Typ.	Max.	Typ.	Max.	Typ.	Max.
EMP322512B-R68MT-TLZ	0.68	15.00	39.00	8.00	7.00	5.90	5.30

● L Test frequency：Test frequency at 1MHz, OSC LEVEL:1.0V

(1) All test data is referenced to 25℃ ambient .
(2) When applying the heat rating current DC （Idc) to coil, it will cause an approximate △T of 40℃.
(3) When applying the saturation current DC(Isat) maximum to coil, it will cause the initial inductance valuel to drop 30%.
(4) Operating Temperature Range -40℃ to +125℃ (including coil's self-temperature rise).

● Shape & Dimensions

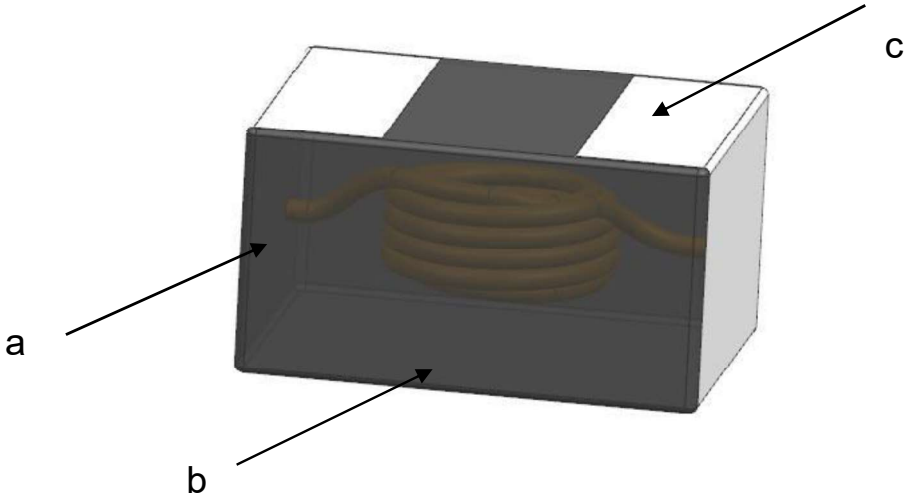
Unit: mm



Recommend Land Pattern

Type	A	B	C	D typ	E typ	F typ	G typ	H typ
EMP322512B	3.2 ±0.2	2.5 ±0.2	1.2 Max.	1.0	1.2	3.5	2.8	0.8

● Material List



No.	ITEM	Materials
a	Wire	Copper wire
b	Core	Metal alloy
c	Terminal	Sn

● Storage conditions/Matters need attention:

(1) Storage temperature and humidity conditions :

a. Product packing with Carrier tape: -10℃~+40℃ and less than 60% RH.

b. Product alone: -20℃~+60℃ and less than 60% RH.

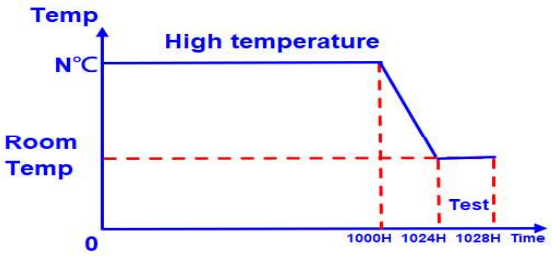
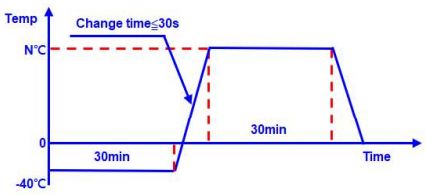
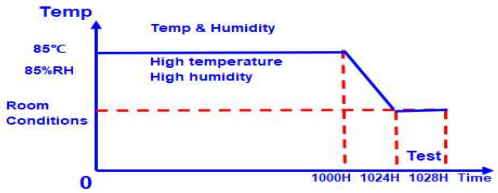
(2) Products should be used within 6 months.(Note that the product should be used as soon as Possible once it is folded).

(3) The packaging material should be kept where no chlorine or sulfur exists in the air

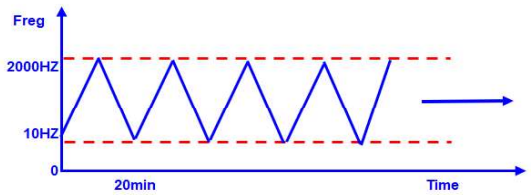
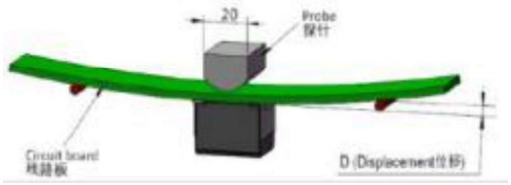
(4) Do not touch the electrodes (soldering terminals) with fingers as this may lead to deterioration of Solderability.

(5) The use of tweezers or vacuum pick-ups is strongly recommended for individual components. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Reliability and Test Condition

Item	Performance	Test Condition
High Temperature Storage Reference documents: MIL-STD-202G Method 108 (Sample Q'ty:77PCS)	1. No significant defects in appearance. 2. ΔL/L≦10%. 3. ΔDCR/ΔDCR≦10%.	Temperature: N℃ (N: Follow the product specification for the setting.) 1000 hrs. at rated operating temperature (eg.125°C part can be stored for 1000 hrs. @ 125°C. Same applies for 105°C and 85°C.Unpowered. Measurement at 24±4 hours after test conclusion. 
Temperature Cycling Reference documents: JESD22 Method JA-104 (Sample Qty:77PCS)	1. No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	Temperature: N℃ (N: Follow the product specification for the setting.) 1000 cycles (-40°C to +125°C). Note: If 85°C part or 105°C part the 1000 cycles will be at that temperature. Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1min. maximum transition time. 
Biased Humidity Reference documents: MIL-STD-202G Method 103 (Sample Qty:77PCS)	1.No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	1000 hours 85°C/85%RH. Unpowered. Measurement at 24±4 hours after test conclusion. 
Operational Life Reference documents: MIL-PRF-27 (Sample Qty:77PCS)	1. No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	1000 hrs. @105°C. If 125°C or 155°C parts should be tested at the temperature specified. Measurement at 24±4 hours after test conclusion.

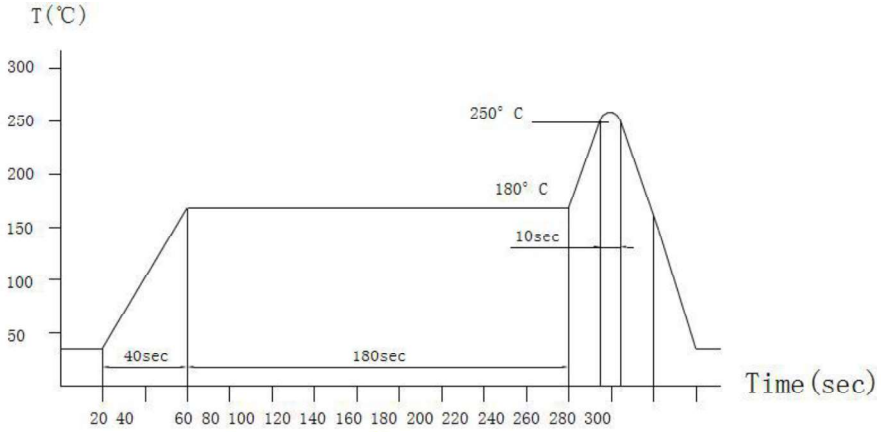
● Reliability Test (AEC-Q200)

Item	Performance	Test Condition
Mechanical Shock Reference documents: MIL-STD-202Method 213 (Sample Qty:30PCS)	1. No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	Condition C：PGA: 100g.s; Duration: 6ms; Using half-sine waveform with max velocity change of 12.3ft/sec
Vibration test Reference documents: MIL-STD-202 Method 204 (Sample Qty:30PCS	1. No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	Test from 10-2000 Hz.5g's for 20 minutes, 12 cycles each of 3 orientations. 
Solderability Reference documents: IPC J-STD-002D (Sample Qty: 15PCS)	1. No significant defects in appearance. 2. ΔL/L≦10% 3. ΔDCR/ΔDCR≦10%	1.Steam aging: 8 hours; (93℃) 2.In solder pot at 245±5°C for 5 second
Board Flex Reference documents: AEC-Q200-005 (Sample Qty:30 PCS)	No significant defects in appearance.	The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum (or as defined in the customer specification or Q200). The duration of the applied forces shall be 60 (+ 5) Sec. The force is to be applied only once to the board. 
Terminal Strength (SMD) Reference documents: AEC-Q200-006 (Sample Qty: 30 PCS)	No significant defects in appearance.	Apply a 17.7N (1.8Kg) force to the side of a device being tested. This force shall be applied for 60 (+1) seconds. 

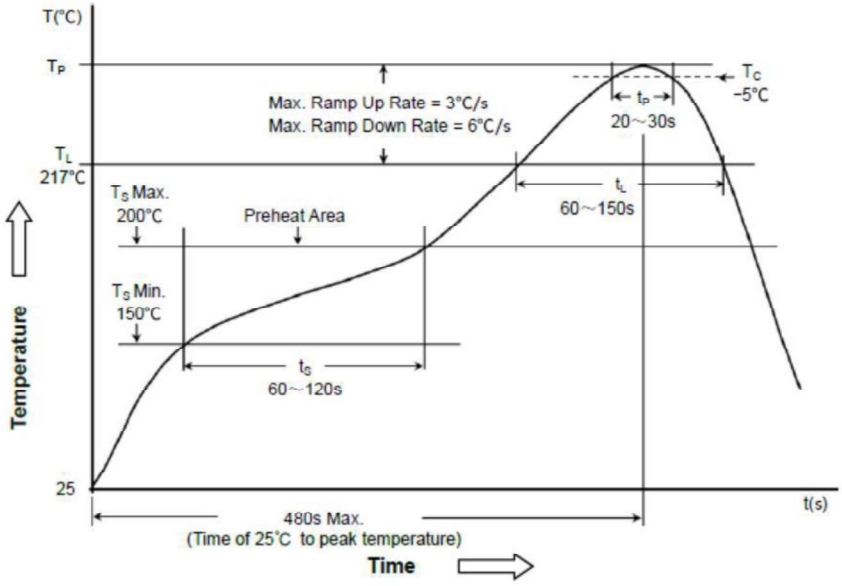
● Recommended Reflow Profile

Soldering and Mounting

(1). Recommended Reflow Conditions （Lead-free）



Reflow profile for SMT components



Classification of peak package body temperature (T_P)

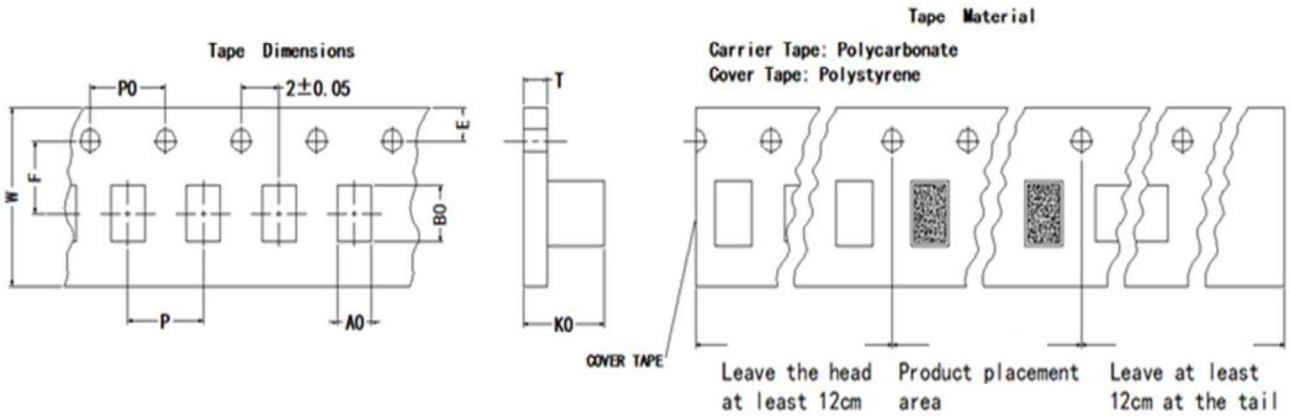
	Package Thickness	Package Volume		
		<350 mm³	350~2000 mm³	>2000 mm³
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6~2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

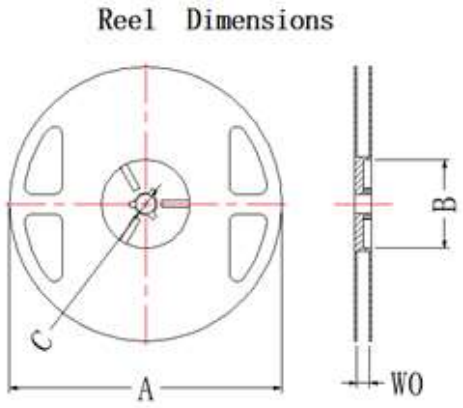
a. Reflow soldering is carried out under this condition and placed under normal temperature and humidity conditions

b. Twice reflow test is acceptable with the test interval remaining 1 hour under the normal conditions.

c. The reflow test profile may vary with the testing instruments.

● Packaging Style

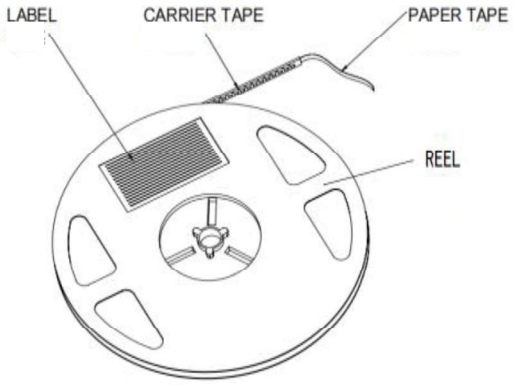




Type	Tape Dimensions（mm）								Reel Dimensions（mm）				Reel / pcs
	P	W	E	F	P0	A0	B0	K0	A	B	C	W0	
EMP322512B	4.00 ±0.10	8.00 ±0.10	1.75 ±0.05	3.50 ±0.10	4.00 ±0.10	2.80 ±0.10	3.50 ±0.10	1.34 ±0.10	178.0 ±2.00	60.0 ±2.00	12.0 ±0.50	10.0 ±1.50	3000

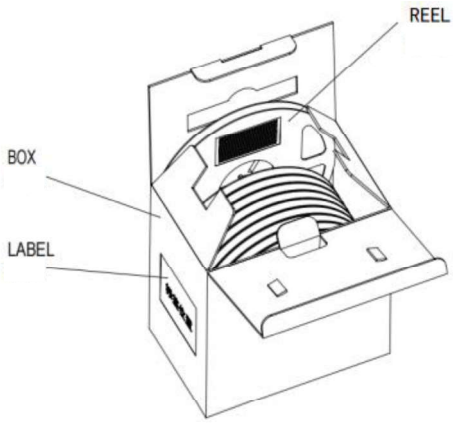
●The packing way and quantity

(A)



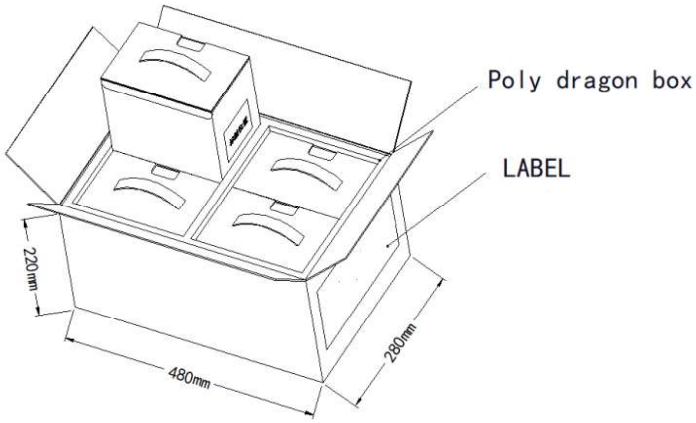
Qty per reel: 322512: 3000 pcs/Reel.

(B)



Qty per inner box: 322512: 30000 pcs/Inner box.

(C)



Qty per carton: 322512: 120000 pcs/Carton.

● Reminders

■ Do not use for a purpose outside of the contents regulated in the delivery specifications.

■ Do not exceed the rated current

☆If it is used exceeding the rated current, insulation resistance may decrease and excessive heat generation may occur.

☆In case of any abnormality or malfunction of our products, be sure to add the appropriate Fail safe function to the finished product to prevent secondary disasters.

■ The storage period is less than 6 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, humidity: 20 to 75% RH or less).

☆If the storage period elapses, the soldering of the terminal electrodes may deteriorate

☆Avoid storage in places subject to direct sunlight, vibration, etc.

☆Do not use or store in an environment (chlorine gas, acid, alkali, sulfide gas, etc.) that is affected by gas corrosion.

■ Please do not give excessive vibration and impact.

■ Do not design Through hole or Pattern under Coil.

■ Please arrange so that Coil does not touch each other.

■ When incorporating the circuit board into the SET, be sure not to apply stress to the Coil due to distortion of the board due to Screw fastening part or the like.

■ Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.

■ Soldering correction method

- Pre Heat：150℃ 2min.
- Soldering tip temperature: 350 ° C or less
- Correction work time: within 3 seconds
- Soldering tip power: 80 W or less
- Soldering tip diameter: Φ 3 mm or less

■ Use a wrist band to discharge static electricity in your body through the grounding wire.

■ Do not expose the products to magnets or magnetic fields.

■ For resin Coating, pay attention to resin selection and perform reliability evaluation in the mounted state.